5.0 NONRADIOLOGICAL ENVIRONMENTAL PROGRAM INFORMATION

MEMP releases minor quantities of nonradiological constituents to the environment. These releases are governed by State of Ohio permits. The primary concern for air pollutants is particulate matter. MEMP monitors the impact of nonradiological airborne releases by measuring airborne particulates at both onsite and offsite locations. Nonradiological releases to water are also subject to extensive sampling protocols. In 2000, MEMP collected over 1,300 water samples to demonstrate compliance with the site's National Pollutant Discharge Elimination System (NPDES) permit and Authorization to Discharge (ATD).

5.1 Air Monitoring Program

Airborne Effluent

The primary source of nonradiological airborne emissions at MEMP is the steam power plant. The plant is normally fueled with natural gas, but under certain circumstances fuel oil is used. Fuel oil with a 0.1% sulfur content is burned during unusually cold weather or if the natural gas supply to the site is interrupted. Approximately 4315 liters (1140 gallons) of fuel oil and 5,450,000 m^3 (192,470,000 ft^3) of natural gas were burned during 2000. Powerhouse emissions are comprised primarily of sulfur oxides, nitrogen oxides, VOCs, carbon monoxide, lead, and particulates. Airborne effluent rates are calculated using a mass balance approach or AP-42 (EPA, 1985) emission factors. Annual emission rates are presented in Appendix C, Table C-1.

Ambient Air Monitoring

MEMP evaluates particulate concentrations at eight onsite and 12 offsite locations. Sampling locations are shown in Figures 4-4 and 4-5. High-volume particulate air samples are collected weekly by flowing air through a 200-mm diameter fiberglass filter. The system operates at about 1.3×10^6 cm^3/min which represents a sample volume of 13,000 m^3 of air per week. By weighing the filter paper before and after use, it is possible to determine the mass of particulates retained by the filter. The mass loading and known air volume can then be used to generate concentration values. Results for 2000 are presented in Appendix C, Table C-2.

Results for 2000

Nonradioactive air emissions from MEMP in 2000 did not significantly affect ambient air quality. All regulated releases were below permit limits, and comparisons of particulate concentrations measured onsite versus offsite suggest little or no influence by MEMP. The Ohio ambient air quality standard (50 $\mu g/m^3$) is provided as a reference value for particulate measurements. This value is the state goal for average ambient air quality over a three-year period. In 2000, average particulate concentrations measured at onsite sampling locations were below this standard. See Table C-2.

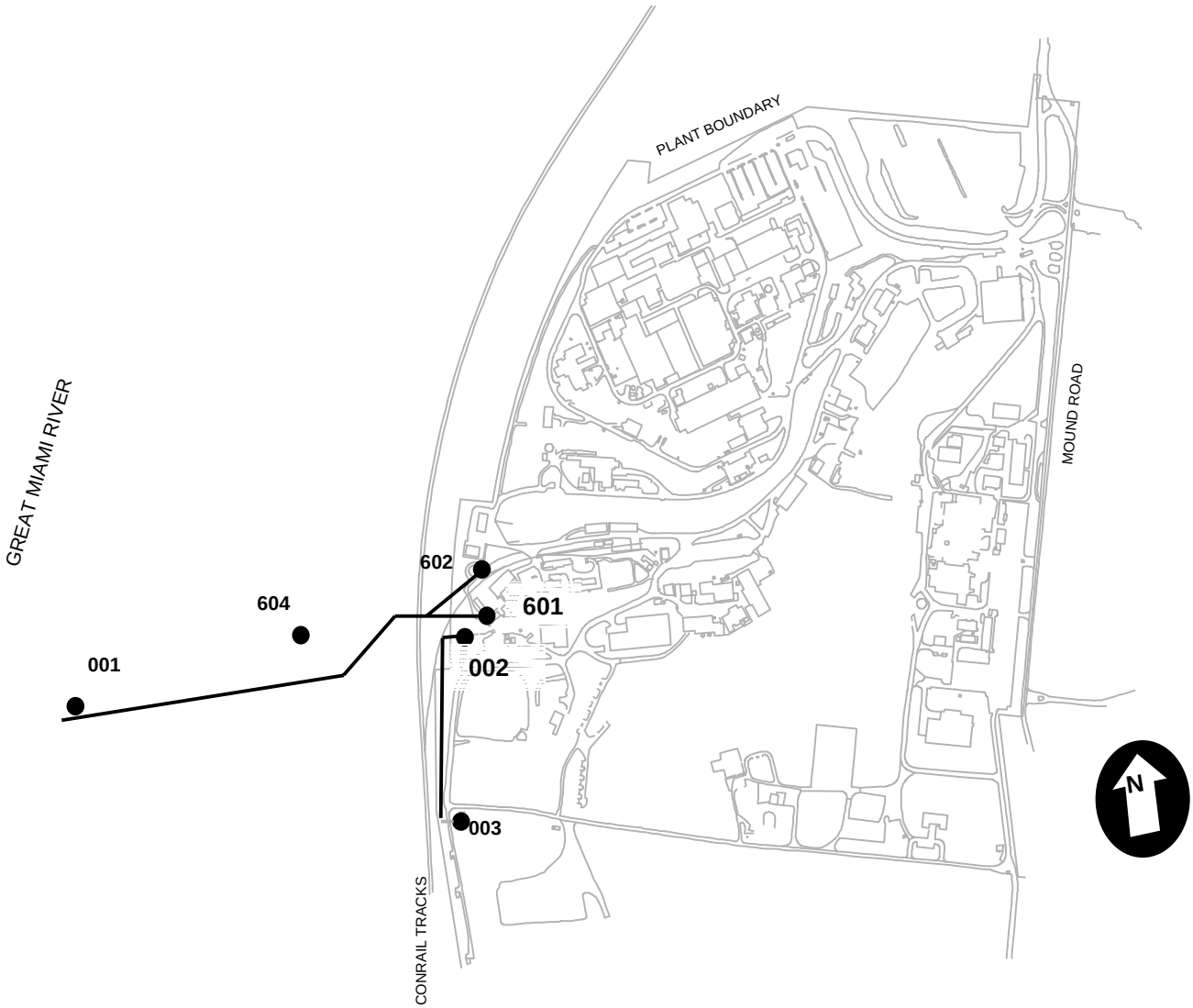
5.2 Water Monitoring Program

MEMP releases wastewater to offsite surface waters via three discharge systems. In 2000, MEMP discharged an average of 0.73 million gallons (2.76 million liters) of water per day to the Great Miami River. U. S. Geological Survey data indicate that the 2000 flow rate in the river averaged 2,084 million gallons per day (MGD), with minimum and maximum flow rates of 406 MGD and 22,600 MGD, respectively. The average magnitude of the river flow rate is significantly greater than that of MEMP's effluents. Therefore, releases from the site can be expected to have a minimal effect on river water quality outside of the mixing zone.

The site's wastewater discharges are regulated by the NPDES permit and ATD. The NPDES permit was most recently modified by the Ohio EPA in March of 1998; it is effective until March 2002. The ATD governs discharges from the CERCLA OU1 groundwater pump and treat system. The ATD was issued July 11, 1997, and will remain in effect for the duration of the project. The NPDES permit and ATD define discharge limits and monitoring frequencies for the site's water effluents.

The site's NPDES permit requires scheduled collection and analysis of site effluents at three onsite locations (Outfalls 601, 602, and 002). Flow-weighted effluent limitations are further imposed for the combined discharges from Outfalls 601 and 602 (calculated Outfall 001). Additional samples are required for one offsite outfall (604) when operating. The ATD specifies monitoring requirements for the OU1 pump and treat system. This sampling location is designated Outfall 003. NPDES permit and ATD sampling locations are shown in Figure 5-1. A brief description of each outfall follows Figure 5-1.

Figure 5-1. NPDES Permit and ATD Sampling Locations


PLANT BOUNDARY
GREAT MIAMI RIVER
MOUND ROAD
602
604
601
001
002
003
CONRAIL TRACKS
N

Outfall 601. Outfall 601 contains the effluent from the sanitary waste treatment plant. Flow-proportional, 24-hour composite samples and periodic grab samples are collected at this outfall. Monitoring requirements for this location focus on conventional pollutants and heavy metals. The effluent is also sampled quarterly for ten specific volatile organic compounds.

Outfall 602. Outfall 602 includes stormwater runoff, single-pass cooling water, zeolite softener backwash, and effluent from the radioactive waste disposal facility. Flow-proportional, 24-hour composite samples and periodic grab samples are collected at this outfall. Monitoring requirements for this location include oil and grease, chemical oxygen demand, and suspended solids.

Outfall 002. Outfall 002 contains softener backwash, cooling tower blowdown, single-pass cooling water, and most of the site's stormwater runoff. Flow-proportional, 24-hour composite samples and periodic grab samples are collected at this outfall. Monitoring requirements for this location focus on pH and suspended solids.

Outfall 001. Outfall 001 represents the combined effluents of 601 and 602. These discharges are combined and released to the Great Miami River via a closed pipe. Since sampling is not practical, additional limits for this outfall are imposed based on flow-weighted calculations. A composite sample is generated from samples collected from Outfalls 601 and 602. The concentrations of materials present in the composite sample represents an estimate of concentrations actually present in the effluent discharged through the pipe.

Outfall 604. Outfall 604 is a groundwater well, also known as Miamisburg Well 2, located west of the site. In the past, the well was purged to reduce tritium concentrations. The purged water was directed through a closed pipe to the Great Miami River. Monitoring of flow rate, pH, and VOCs is required for discharges from this outfall. The well was last pumped in 1991. In 1998, the closed pipe was removed and the electricity was disconnected.

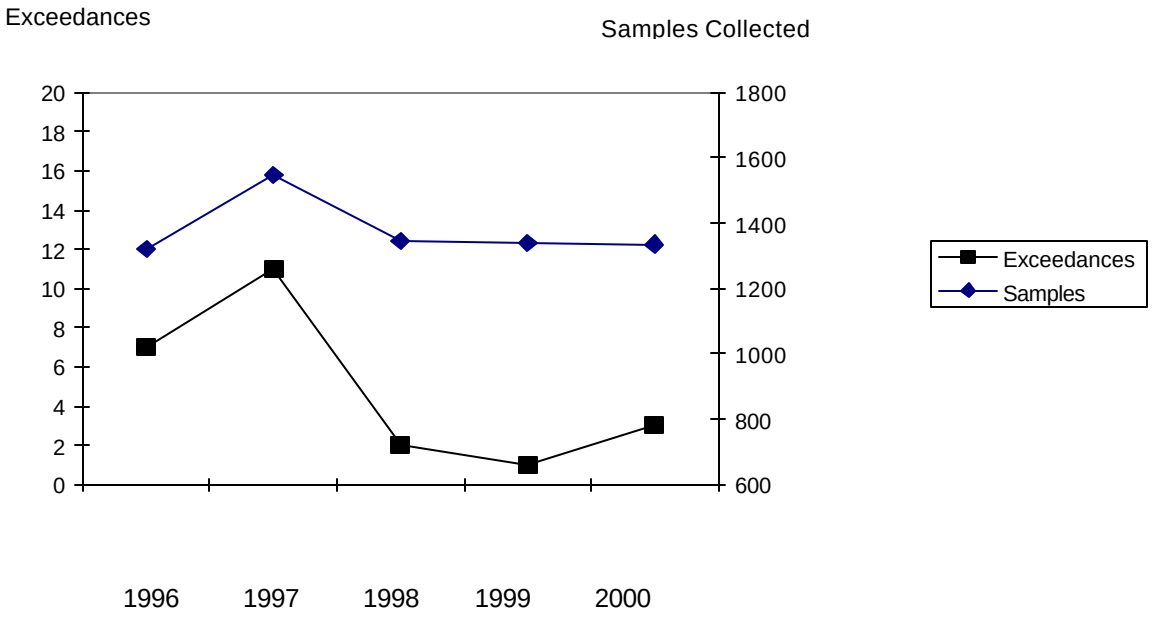
Outfall 003. Outfall 003 is the discharge from the CERCLA OU1 groundwater pump and treat system. Time-proportional, 24-hour composite samples and periodic grab samples are collected at this outfall. Monitoring requirements for this location focus on VOCs and heavy metals. Biotoxicity tests are also performed quarterly each year at this outfall.

Results for 2000

More than 1,300 samples were analyzed for NPDES and ATD parameters in 2000. Key results are summarized in Appendix C, Table C-3. Analytical procedures were consistent with the methods specified in regulations of the Clean Water Act, 40 CFR 136. Sampling and analytical services were provided by BWXTO's Environmental Monitoring laboratory and by outside contractors. All such procedures meet EPA and BWXTO standards for quality assurance and quality control.

A review of NPDES and ATD performance over the past five years is shown in Figure 5-2. In 2000, three NPDES total suspended solids (TSS) permit exceedances were recorded. In July, exceedances of the TSS 30-day average concentration limitation occurred at Outfalls 002 and 602. The cause of the exceedances was over five inches of rain received in a three-day period, resulting in daily occurrences large enough to skew the monthly averages. The daily occurrences were exempted due to storm flow conditions. Monthly averages are not exempted. The other TSS exceedance occurred in November at Outfall 602 when storm water inlet protection material failed near a construction site. In October, BWXTO reported to the OEPA Hotline an unauthorized release of ethylene glycol at Outfall 002. Ethylene glycol is not a permitted priority pollutant in the site's NPDES permit. The concentration that was potentially released off site was below the state water quality standard. Also in October, the Ohio EPA issued a Notice of Violation (NOV) for Outfall 602 regarding acute biotoxicity. The acute biotoxicity was due to elevated levels of chlorine during Ohio EPA's permit renewal sampling. No ATD exceedances occurred in 2000. No enforcement actions were initiated in 2000.

Figure 5-2. NPDES and ATD Sampling Profile, 1996 - 2000



5.3 Submissions under SARA Title III

Title III of the Superfund Amendments and Reauthorization Act (SARA) addresses the emergency planning and community right-to-know responsibilities of facilities handling hazardous substances. Sections 311 and 312 of Title III specify reporting requirements for the use and/or storage of "extremely hazardous" and "hazardous" substances. For facilities subject to Section 311 and 312, chemical usage, storage, and location information must be submitted to regional emergency response agencies before March 1 each year. In 2000, BWXTO used and/or stored two extremely hazardous substances and six hazardous substances in excess of reporting thresholds. This information, along with site maps showing usage and storage locations, is reported to the State Emergency Response Commission, the Miami Valley Regional Planning Commission, and the City of Miamisburg Fire Department each year. The eight regulated substances handled by BWXTO are listed in Table 5-1.

Table 5-1. 2000 SARA Title III Emergency and Hazardous Chemical Data

Hazardous Substances

Diesel fuel	Gasoline, unleaded	Ethylene glycol
No. 2 fuel oil	Nitrogen	Argon

Extremely Hazardous Substances

Sulfuric acid	Nitric acid

Section 313 of Title III specifies reporting requirements associated with the release of toxic chemicals. For facilities that exceed the reporting threshold, toxic chemical release data must be submitted to the U. S. EPA before July 1 each year. In 2000, BWXTO used ethylene glycol in excess of the reporting threshold and will submit a "Form R" to the Ohio EPA and USEPA in 2001.

5.4 Environmental Occurrences

Under CERCLA and the Clean Water Act, reportable quantity (RQ) levels have been established for designated hazardous substances. If a spill or other inadvertent release to the environment exceeds the RQ, immediate notification of the appropriate federal agencies (e.g., National Response Center, EPA, or Coast Guard) is required. No such releases occurred at MEMP during 2000.